

CPC**COOPERATIVE PATENT CLASSIFICATION****B61F**

RAIL VEHICLE SUSPENSIONS, e.g. UNDERFRAMES, BOGIES, ARRANGEMENTS OF WHEEL AXLES; RAIL VEHICLES FOR USE ON TRACKS OF DIFFERENT WIDTH; PREVENTING DERAILING; WHEEL GUARDS; OBSTRUCTION REMOVERS, OR THE LIKE (for vehicles in general B60; axles, wheels B60B; tyres B60C)

B61F 1/00

Underframes (making railway vehicle underframes by forging or pressing [B21K 7/12](#))

B61F 1/02

- . with a single central sill

B61F 1/04

- . of triangulated type

B61F 1/06

- . specially adapted for locomotives or motor-driven railcars

B61F 1/08

- . Details

B61F 1/10

- .. End constructions

B61F 1/12

- .. Cross bearers

B61F 1/14

- .. Attaching or supporting vehicle body-structure

B61F 3/00

Types of bogies ([B61F 5/00](#) takes precedence)

B61F 3/02

- . with more than one axle

B61F 3/04

- .. with driven axles or wheels

B61F 3/06

- ... with three or more axles

B61F 3/08

- .. without driven axles or wheels

B61F 3/10

- ... with three or more axles

B61F 3/12

- . specially modified for carrying adjacent vehicle bodies of articulated trains

B61F 3/125

- .. {with more than one axle or wheel set}

B61F 3/14

- . specially modified for reducing air resistance

B61F 3/16

- . with a separate axle for each wheel

B61F 5/00

Constructional details of bogies; Connections between bogies and vehicle underframes; Arrangements or devices for adjusting or allowing self-adjustment of wheel axles or bogies when rounding curves

B61F 5/02

- . Arrangements permitting limited transverse relative movements between vehicle underframe or bolster and bogie; Connections between underframes and bogies

B61F 5/04

- .. Bolster supports or mountings ([side bearings B61F 5/14](#))

- B61F 5/06 . . . incorporating metal springs
- B61F 5/08 . . . incorporating rubber springs
- B61F 5/10 . . . incorporating fluid springs
- B61F 5/12 . . . incorporating dampers
- B61F 5/122 {with friction surfaces}
- B61F 5/125 {with rubber elements ([B61F 5/08](#) takes precedence)}
- B61F 5/127 {with fluid as a damping medium}
- B61F 5/14 . . Side bearings
- B61F 5/142 . . . {made of rubber elements, graphite or the like}
- B61F 5/144 . . . {comprising fluid damping devices ([B61F 5/146](#) takes precedence)}
- B61F 5/146 . . . {of the oil bath type; Lubrication devices for side bearings}
- B61F 5/148 . . . {between bolsterless bogies and underframes ([B61F 5/142](#) - [B61F 5/146](#) take precedence)}
- B61F 5/16 . . Centre bearings or other swivel connections between underframes and bolsters or bogies
- B61F 5/18 . . . King-bolts
- B61F 5/20 . . . with springs allowing transverse movements
- B61F 5/22 . . Guiding of the vehicle underframes with respect to the bogies
- B61F 5/24 . . . Means for damping or minimising the canting, skewing, pitching, or plunging movements of the underframes
- B61F 5/245 {by active damping, i.e. with means to vary the damping characteristics in accordance with track or vehicle induced reactions, especially in high speed mode}
- B61F 5/26 . . Mounting or securing axle-boxes in vehicle or bogie underframes
- B61F 5/28 . . Axle-boxes integral with, or directly secured to, vehicle or bogie underframes
- B61F 5/30 . . Axle-boxes mounted for movement under spring control in vehicle or bogie underframes ([B61F 5/36](#) takes precedence over [B61F 5/305](#) - [B61F 5/34](#))
- B61F 5/301 . . . {incorporating metal springs}
- B61F 5/302 {Leaf springs}
- B61F 5/304 {Torsion-bar springs}
- B61F 5/305 . . . {incorporating rubber springs}
- B61F 5/307 . . . {incorporating fluid springs}
- B61F 5/308 . . . {incorporating damping devices}
- B61F 5/32 . . Guides, e.g. plates, for axle-boxes
- B61F 5/325 {The guiding device including swinging arms or the like to ensure the parallelism of the axles}
- B61F 5/34 Wedge mechanisms for adjusting clearance between underframes and axles
- B61F 5/36 . . Arrangements for equalising or adjusting the load on wheels or springs, e.g. yokes
- B61F 5/38 . . Arrangements or devices for adjusting or allowing self- adjustment of wheel axles or bogies when rounding curves, e.g. sliding axles, swinging axles
- B61F 5/383 . . {Adjustment controlled by non-mechanical devices, e.g. scanning trackside elements}
- B61F 5/386 . . {fluid actuated}

- B61F 5/40 .. Bogies with side frames mounted for longitudinal relative movements
- B61F 5/42 .. Adjustment controlled by buffer or coupling gear
- B61F 5/44 .. Adjustment controlled by movements of vehicle body
- B61F 5/46 .. Adjustment controlled by a sliding axle under the same vehicle underframe
- B61F 5/48 .. Trailing or leading bogies for locomotives or motor- driven railcars ([B61F 5/40 takes precedence](#))

- B61F 5/50 . Other details
- B61F 5/52 .. Bogie frames
- B61F 5/523 ... {comprising parts made from fibre-reinforced matrix material}
- B61F 5/526 ... {comprising noise reducing devices}

- B61F 7/00 Rail vehicles equipped for use on tracks of different width**

- B61F 9/00 Rail vehicles characterised by means for preventing derailing, e.g. by use of guide wheels**

- B61F 9/005 . {by use of non-mechanical means, e.g. acoustic or electromagnetic devices}

- B61F 11/00 Rail vehicles characterised by rail-engaging elements other than wheels, e.g. balls**

- B61F 13/00 Rail vehicles characterised by wheel arrangements, not otherwise provided for**

- B61F 15/00 Axle-boxes (mounting or securing axle-boxes [B61F 5/26](#); lubrication [B61F 17/00](#); bearings in general [F16C](#))**

- B61F 15/02 . with journal bearings
- B61F 15/04 .. for locomotives
- B61F 15/06 .. for cars
- B61F 15/08 .. the axle being slidable or tiltable in the bearings
- B61F 15/10 ... and having springs opposing such movements

- B61F 15/12 . with roller, needle, or ball bearings
- B61F 15/14 .. constructed for taking-up axial pressure
- B61F 15/16 .. the axle being slidable or tiltable in the bearings
- B61F 15/18 ... and having springs opposing such movements

- B61F 15/20 . Details
- B61F 15/22 .. Sealing means preventing entrance of dust or leakage of oil
- B61F 15/24 ... preventing oil leakage when vehicle is tilted or inverted
- B61F 15/26 .. Covers; Sealing thereof
- B61F 15/28 .. Axle-boxes modified to ensure electrical conductivity

B61F 17/00 **Lubrication specially adapted for axle-boxes of rail vehicles** ([lubrication in general F16N](#))

- B61F 17/02 . with oil
- B61F 17/04 .. Lubrication by stationary devices
- B61F 17/06 ... by means of a wick or the like
- B61F 17/08 Devices for pressing the wick or the like against the rotating axle
- B61F 17/10 ... by means of an oil bath
- B61F 17/12 ... by gravity
- B61F 17/14 .. Rotating lubricating devices
- B61F 17/16 ... with rings
- B61F 17/18 ... with chains
- B61F 17/20 ... with scoops or the like attached to, or coupled with, the axle
- B61F 17/22 ... with discs, rollers, or belts engaging the axle
- B61F 17/24 .. by built-in lubricating pumps
- B61F 17/26 .. by external feeding means, e.g. pneumatic devices
- B61F 17/28 .. Applications of oil cleaners not otherwise provided for

- B61F 17/30 . with grease
- B61F 17/32 .. by manually-operated lubricators, e.g. screw cups
- B61F 17/34 .. by automatic means, e.g. with spring action

- B61F 17/36 . with other, e.g. mixed, lubricating agents

B61F 19/00 **Wheel guards; Bumpers; Obstruction removers or the like** ([for vehicles in general B60R 19/00](#))

- B61F 19/02 . Wheel guards
- B61F 19/04 . Bumpers or like collision guards
- B61F 19/06 . Nets, catchers, or the like for catching obstacles or removing them from the track
 ([mailbag catchers B61K 1/02](#))
- B61F 19/08 .. of the drop-down type
- B61F 19/10 ... automatically operated by engagement with obstacle

B61F 99/00 **Subject matter not provided for in other groups of this subclass**